

Convergence: Human Intelligence The Next 100 Years
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Abstract

How might human intelligence evolve over the next 100 years? This issue paper explores that idea.

First, the paper summarizes five emerging perspectives about human intelligence: Howard Gardner's multiple intelligences theory, Robert Sternberg's triarchic theory of intelligence, Ellen Langer's mindfulness theory, David Perkins' learnable intelligences theory, and Patricia Wolfe's brain research for the classroom. These persuasions seem to be merging into a family of views that counter the long held belief that intelligence is a single, unchanging IQ score. The theories illustrate convergence, a 21st century phenomenon across a number of fields including digital electronics. As such, the five views might be termed "teachable intelligence" because they share the belief that intelligences can grow over a life span. Then, best, worst, and probable scenarios tell how human intelligence might evolve in our nation.

A method from the futures research community, scenario writing reaches beyond the laboratory to address research problems that otherwise would remain virginal.

"How do you know we're living in the 21st century?"

"How?"

"When 'burn a CD' means add information to a compact disk instead of set fire to a certificate of deposit?"

That dialogue illustrates a game my wife and I often play. The first two questions are standard. Player one begins with the prompt. Player two says "How?" Player one gives the answer that stands for life in the 21st century.

Here's one for you.

"How do you know we're living in the 21st century?"

You answer, How?"

I say, when you can join millions of people on CNN to watch the second plane spear the World Trade Center in real time with countless replays.

More abstractly, I could have said **convergence** has happened in several fields. Take for instance, the recent merger between Verizon and MCI.

As Wall Street Journal reporter, Almar Latour, explains, "For consumers, the long-awaited convergence between communications and media into digital form is bringing the prospect of a single company providing everything via one high-speed pipe into their homes."

Says, Latour, "In the long-term, especially in metropolitan areas, that could keep prices down.

He adds, Even as the mergers are reducing the number of players in any one area, convergence is bringing new competitors into each other's business." (Latour, 2005)

The Verizon and MCI merger foreshadows the day when one company provides all sorts of telecommunication services in one package.

In brief, convergence means two or more ideas merged into a new idea. The new idea has properties its component ideas do not have. For example, Honda's Insight combines a gasoline engine with an electric engine. The result: the Insight gets about 700 miles to a tank. The car also has low emissions and, thus, contributes less to Global Warming. It is one small step toward the dream vehicle of a deep ecologist.

A product or idea representing convergence is not only greater than the sum of parts; it has emergent properties that are dramatically different than the parts.

Cake, resulting from the merging of eggs, sugar, butter, flour, heat etc., becomes a texture and taste unknown to its ingredients.

While the word "convergence" is not new in the language, the 21st century meaning owes its life to a special report of *Scientific American*. This issue featured convergence in the digital entertainment field.

A short hand way of thinking about convergence is the merger between two technologies. The computer and television are merging to create digital television.

"D-entertainment" derives from the merger of TV, movies, Internet, video, and music. (Forman and Saint John, 2000)

My scans of *Scientific American*, *Harvard Business Review*, the *Sunday New York Times*, and *The Futurist* led, inductively, to a set of files that illustrate convergence within and across a diverse set of fields such as digital electronics, deep ecology, biotechnology, human evolution and human intelligence.

Issue

These files are not the only ones possible, but they do illustrate how convergence seems to be working: several products or ideas merge into one more complex idea.

Of concern in this issue paper, however, is this:

How might human intelligence evolve in next 100 years?

This is a story of convergence.

Background

To think about an issue set in a time horizon of 100 years requires thinking outside the box. Or as a poster on a Philadelphia commuter train says, "Forget about the box, think strategically."

Strategic thinking begins with context.

As part of historical context for any idea, James Redfield helps us to take a long-term view. Redfield's Professor Dobson, a fictional character from his novel *Celestine Prophecy*, told the main character (the narrator) to think of a longer now—1,000 years in the past—in order to understand a present event. (Redfield, 1993)

It seemed to me, as a futurist, that a longer now really meant plus and minus 1,000 years.

Then Stuart Brand wrote *Clock of the long now*. His book extended the idea of longer now to 10,000 years in the future. Brand reasoned that civilization began in Egypt along the Nile River about 10,000 years ago. So 10,000 years from now would be the time set for the giant clock he would build to gong every one thousand years leading to the big gong 10,000 years from now.

The clock of the longer now became an international metaphor for long term thinking. (Brand, 1999)

When recast in terms of human evolution, even Brand's longer now seems very short indeed. Many new theories of evolution speak of time horizons in the millions.

More so, as human theories of evolution converge, a few fact-based beliefs surface. These provide a deeper historical context for exploring connections among a family of new views on human intelligence.

- ❖ **Human beings evolved from hominids, the common ancestors of both apes and humankind, about 3.5 million years ago, probably in East Africa**
- ❖ **Early humans learned to walk upright which increased many of their abilities as it enabled them to travel further and faster**
- ❖ **Homo Erectus became a tool making species with a highly evolved brain including a more developed frontal lobe**
- ❖ **Homo sapiens evolved later and increased their frontal lobe power, finger dexterity, and language capacities**
- ❖ **Both Homo Erectus and Homo Sapiens coexisted for a time**
- ❖ **Homo sapiens, as a species, may be about 50,000 years old and the rate of evolution seems to be speeding up as cultures evolve and interact with human development**

Along came the late Japanese thinker Yoneji Masuda. He coined the term **Homo intelligens** to describe a species that may evolve within the next 10,000 years.

In Masuda's imagination, enlightened human beings are Homo intelligens. (Masuda, 1985)

In brief, Masuda's "Hypothesis on the genesis of Homo Intelligens" says the following.

The genesis of new man as a species is the theme of this article. My hypothesis of the new man is not as a spaceman of science fiction, but is an attempt to anticipate the genesis of new man scientifically, by linking recent results from paleoanthropology and sociobiology with advanced information science, and by use of historical analogy. I suggest for new man the name of Homo intelligens, as distinct from modern man, whom we call Homo sapiens. I consider that the genesis of Homo intelligens stems from the Creator's providence directed against modern man, who has brought upon himself the crisis of his own existence as a species. (Masuda, 1985)

But the value of Masuda' article does not rest solely on its vision of human evolution (that as humans evolve they become more complex and eventually, perhaps in 10,000 years, will become a new species).

Rather it provides three signposts of evolution that add strategic value to the immediate discussion of intelligence. Masuda argues that the human frontal lobe, finger dexterity, and language are keys to evolution of Homo intelligens just as they had been for Homo sapiens earlier. (Masuda, 1985)

In summary, to think about human intelligence strategically, is to think of its historical context, evolutionary framework, time horizon, and direction.

Humans have a long history of becoming increasingly more complex. And while species survival is not assured, in another 10,000 years, it may evolve into a new level.

Within the present Information Society, spiraling toward ever more complexity in human intelligence, convergence becomes a theme.

Such an exploration begins with descriptions of early 21st century theories of intelligence that appear to be merging. Each of these theories has a set of unique qualities.

What are the unique qualities? How do these shared beliefs merge into a new view that intelligence is teachable? How might frontal lobe power, as an emergent property, serve as the basis of scenarios about the development of intelligence over the next 100 years?

Current 21st century theories of intelligence

For most of the 50,000 years Homo sapiens have been walking the Earth, intelligence had remained a folk idea. Then, about 100 years ago, psychology, a new field, took on intelligence as an idea to be defined in a way that could be measured. The IQ score became the standard. Intelligence meant IQ score. (Gardner, 1983; Perkins 1995)

The 1st wave view of intelligence suggested that IQ didn't change much over a life span. In fact, the high correlation to other intelligence tests assured that a person's score would remain relatively constant across tests as well stay faithful to a bell curve.

Yet, many believed that IQ score did not measure all there was in human intelligence. Notable names among the non believers included Jean Piaget and Lev Vygotsky. But more to the point, many teachers in our nation did not believe IQ scores described adequately what they saw in their classrooms. Children often outperformed or underperformed their IQ scores, depending on the context and encouragement they received from significant others.

But toward the end of the 20th century, a handful of theories emerged that gave voice to the ordinary teachers who knew about the limitations of IQ scores.

This family of new views of intelligence stood on the shoulders of Piaget and Vygotsky, giving the world a second wave in the field.

Summed in a chart, five new views of intelligence are as follows.

Second Wave Theories of Intelligence

Howard Gardner	Multiple intelligences theory	1983
Robert Sternberg	Triarchic Theory of Intelligence	1985
Ellen Langer	Mindfulness theory	1989
David Perkins	Learnable Intelligences theory	1995
Patricia Wolfe	Brain research applications	2001

MI theory

In 1983, our nation took a hard shot from "A nation at risk." This report claimed that schools had become so bad it was as if a state of war had been declared to bring our nation down.

Not intending to give a response, Howard Gardner released *Frames of mind: The theory of multiple intelligences* in that same year. His theory gave us a new way of thinking about human intelligence—one that seemed to better fit both the classrooms in our nation and the people of the world. His was a work that augmented our view of human potential.

In Gardner's view, human intelligence was multiple and teachable: multiple in the sense that people can be word smart, math smart, music smart, sport smart, art smart, people smart, self smart, nature smart, and, more recently, wonder smart; teachable in the sense that each intelligence could be improved with teaching, coaching, and experiences.

That meant human beings could use any one or any combination of the nine intelligences to pose or solve complex problems or fashion intellectual products of value to others. These are God given capacities of human beings.

The core of his theory alone would have been enough to color outside the lines of traditional views of intelligence. But When Gardner said that each intelligence could be improved that debunked the traditional view which claimed that a person was born with an IQ, and this score stayed pretty much unchanged from cradle to coffin.

For the first time in our nation's history, we could see every child as at promise within his or her intelligence profile of nine intelligences (verbal linguistic, logical mathematical, musical, visual spatial, bodily kinesthetic, naturalistic, interpersonal, intrapersonal, and existential. (Gardner, 1983, 1993, 1999)

For the first time teachers and parents alike could think about each child more deeply and select or design experiences that augmented each child's intelligences at promise as well as those less at promise. For the first time we had the tools needed to educate each child for power and consequence: deep disciplinary understanding, the capacity to pose or solve complex problems, the capacity to fashion intellectual products of value to self and others.

Triarchic theory of intelligence

Robert Sternberg's triarchic theory of intelligence suggested that people had three intelligences: analytical, practical, and creative. In varying degrees, similar to each of Gardner multiple intelligences, people had each of these three intelligences. Most people are strong in one of the three, analytical, practical, or creative. A few are strong in none; a few strong in all. (Sternberg, (1998)

Like Gardner's MI, each person, then, has an intelligence profile. Each intelligence can be improved with experience. Just as Gardner's multiple intelligences can be used in combination, so can Sternberg's. From the MI theory side, Labron James combines bodily kinesthetic, visual spatial, interpersonal, and intrapersonal intelligences on a regular basis when he performs on a basketball court. On the Sternberg side, there are those people, also, who can analyze a problem, create novel solutions and create useful solutions at the same time.

God and the evolving universe, a provocative book from James Redfield, Michael Murphy, and Sylvia Timbers, for example, seems high in all three of Sternberg's intelligences. The book analyzes recent theories of evolution and suggests these insights.

The first major evolutionary development happened when matter/energy became one celled life. Then one celled life became multicellular life. Next, this more complex life led to a breakthrough, the creation of human beings. Now human beings are poised for another breakthrough.

Also, their book offers practical and creative suggestions for personal evolution as well. (Redfield, Murphy, and Timbers, 2002) It epitomizes analytical, creative, and practical intelligences.

Toni Morrison stands tall in all three of Sternberg's triarchic view as well. A Nobel Prize winning fiction writer, she epitomizes creativity. Her literacy criticism displays analytical ability, and her recent collaboration with her son Slade Morrison to create a new classic story for children (*Who's Got Game? Poppy or the Snake?*) gets at practical intelligence.

Poppy's victory over the snake even illustrates practical intelligence.

In addition, Gardner once defined intelligence as "the capacity to solve problems and fashion intellectual products of a value in a community." (Gardner, 1983) Whereas, Sternberg defined intelligence as the ability to adapt, select or create an environment. (Sternberg, 1998)

The theories differ in the particulars, but share common beliefs. Intelligence can be taught, and it can increase significantly over a lifespan.

Mindfulness theory

On the surface, Ellen Langer's mindfulness theory doesn't sound much like intelligence. Yet the very characteristics of mindfulness equal intelligent behavior—a rose by any other name.

Langer's most recent book *The Power of mindful learning* offers these characteristics:

- ❖ Mindful people welcome new ideas.
- ❖ Mindful people create new categories.
- ❖ Mindful people hold more than one perspective.

Then she adds the idea that mindful people can reframe contexts and see life as a process. (Langer, 1997)

Unlike the theories of Gardner and Sternberg, Langer's theory grew from studies she conducted at Harvard University. Thus, her beliefs grew from evidence. (Langer, 1989)

In contrast, both Gardner and Sternberg steeped themselves in the field, and then created theories. Gardner's theory, for instance, drew from his study of many fields including neuropsychology.

His multidisciplinary approach led to eight criteria for selecting an intelligence, determining in 1983, that there were seven intelligences, each meeting his eight criteria. As a result, Gardner's multiple intelligences theory was more intuitive. Research on his MI theory had been growing exponentially around the world during its first 22 years of life. And the world famous Harvard University Project Zero Research Center has a research strand on multiple intelligences theory. (See Project Spectrum, Multiple Intelligences Schools, and Adult Multiple Intelligences Project.)

Likewise, Sternberg at Yale University has an organized, ongoing research program for the triarchic theory of intelligence and an 11 step implementation for classrooms.

Regardless of method leading to origin, all three theories now have a growing body of evidence behind them and inform numerous schools in our nation.

Like Gardner and Sternberg, the heart of Langer's theory is that mindfulness is teachable and multiple. Also, it can be increased with mindful learning in the nation's classrooms.

In short, people can learn to be more mindful.

Langer does take pains, however, to quarrel with the traditional view of intelligence. She sees traditional intelligence as concerned with a one to one correspondence to reality—the optimal fit between the individual and environment. But mindfulness, she says, "Controls reality by identifying several possible perspectives from which any situation may be viewed."

She adds, “When we are mindful, we implicitly or explicitly (1) view a situation from several perspectives, (2) see information presented in the situation as novel, (3) attend to the context in which we are perceiving the information, and eventually (4) create new categories through which this information may be understood.” (Langer, 1997)

Learnable intelligence theory

David Perkins, a long time friend of Howard Gardner at Harvard University, in 1997, told a packed house of 260 symposiasts from around the world that he, too, had a multiple intelligences theory. Learnable intelligence, in Perkins’ view connected the traditional view of intelligence to the novel.

He argued that people had a native endowment. This was what IQ tests tried to measure. But he added that experiential intelligence, not only increased the functioning of native endowment, people learned it. Then, reflective intelligence increased both experiential and native endowment.

Through the use of what Jerome Bruner once referred to as “prosthetic devices” (and what Perkins himself called “mindware”) people can practice reflective intelligence. They can learn tools for effective thinking such as those offered in de Bono’s CORT program. They can learn creative problem solving formats such as those deriving from the research of Paul Torrance and Sidney Parnes. They can learn any number of metacognitive devices for writing and reading from grades K-16.

They can practice reflective intelligence all their lives.

Altogether, Perkins’ learnable intelligence theory, then, had three characteristics:

- ❖ Native endowment
- ❖ Experiential
- ❖ Reflective

Like Gardner, Sternberg, and Langer, Perkins suggested that his theory of intelligence broke from the limitations of the traditional view of intelligence. Evidence in the form of research on Perkins’ theory, however, has not grown exponentially, to date.

Yet, it is the only one of the four new theories discussed so far that integrates the traditional view of intelligence with two additional layers.

Perkins looks to the day when reflective intelligence practiced in the form of **mindware** (tools that help students to make the best use of their minds) will increase IQ scores of below and average individuals by as much as two standard deviations. (Perkins, 1995)

Brain research

Patricia Wolfe’s work differs from each of the other theories in that it is more of prequel to a theory. She drew from several studies of the brain completed in the last two decades thanks to numerous technological advances in brain imaging. Then she organized several findings to construct applications for classroom learning.

In her view, understanding how the human brain works is essential understanding how to teach brains. She says the brain makes initial neuronal connections from concrete experiences. Then, symbolic experiences make more neuronal connections on top of the first ones. Finally, abstract experiences make even more complex connections. (Wolfe, 2001)

In the real world of classrooms, this process is not as linear as I have described it, but the basic point remains. To increase a person’s intelligence, give them a balance of concrete, symbolic, and abstract experiences over time.

Wolfe’s applications from brain research and insights from the other neuropsychology researchers may lead to a full blown theory in the next few decades—one given to prediction, control and explanation.

However, if that happens, the studies will still be limited to situations simple enough to have well controlled conditions in experimental or quasi experimental designs.

A passage from Frank Herbert’s *Heretics of Dune* states my bias well.

Quite naturally, holders of power wish to suppress wild research. Unrestricted questing after knowledge has a long history of producing unwanted competition. The powerful want a ‘safe line of investigations,’ which will develop only those products and ideas that can be controlled and most important, that will allow the larger part of the benefits to be captured by inside investors. Unfortunately, a random universe full of relative variables does not insure such a safe line of investigations.

If the safe line of investigations had been followed, MI theory, triarchic theory, mindfulness theory, and learnable intelligences theory would never have been invented.

On the other hand, it is the painstaking evidence from experimental and quasi experimental studies that build up a reliable body of evidence toward what Frijof Capra calls “approximate truth.”

We need the qualitative and the quantitative at this point in the 21st century. After all, convergence is occurring at the paradigm level as well. The Newtonian paradigm dominating the last 400 years of Western thought is merging with Capra’s ecological paradigm right before our minds.

Teachable intelligence

The ideas of Gardner, Sternberg, Langer, Perkins, and Wolfe are merging into a new view of intelligence. Seen from the perspective of convergence, **Teachable intelligence** is that new view. It has a set of shared beliefs and emergent properties unlike its parts.

Teachable intelligence has the following defining characteristics:

- ❖ Multiple intelligences
- ❖ Intelligence capable of growing over a life span as a result of experiences, teaching, coaching, parenting, and reflecting;
- ❖ Intelligence capable of being used in combination to pose or solve problems or fashion intellectual products across a range of media
- ❖ Intelligence capable of being shared with others in multiple forms and media
- ❖ Intelligence as the cornerstone of culturally responsive pedagogy

These characteristics seem to be points of convergence among the five streams of the new construct. But as the family of new theories influence educational programs, policies, and practices across the nation, emergent properties show up to affect many aspects of day to day living.

Emergent properties

Again, teachable intelligence itself has emergent properties not present in its component parts alone. Rather like the ingredients for cake including flour, butter, eggs, and sugar—yielding a taste and texture not present in any of the parts, the emergent properties of teachable intelligence may be thought of in terms of frontal lobe power, finger dexterity, and language.

Schools educating for power and consequence, giving students the capacity to “create texts across media and intelligences” (Fluellen, 2004), are often practicing one of the five forms for teachable intelligence in curriculum, instruction, materials, and assessments. This, in turn, yields increased literacy and Numeracy, and ultimately, increased use of frontal lobes, language, and finger dexterity.

It is not much of a leap, for instance to see how digital electronics extends language. Yet, each instance of digital electronics has properties not inherent in language, itself. These include the ability to write instant messages across digital space.

Nor is it much of a leap to see how nanotechnology extends finger dexterity. Yet, nanotechnology has the ability to use microscopic robots to build structures, a property not given to human fingers.

It is obvious that the global brain represented by a world network of computers linked to solve complex problems increases frontal lobe power. Yet, the capacity of such networking to take on giant problems such as global warming, international poverty, pandemic health concerns, terrorism, world education, is only at the dawn. Grid computing, a new generation of Internet, is on the horizon.

Less obvious are the long term implications for human evolution that these three emergent properties of teachable intelligence offer. To imagine some of these possibilities, I’ll explore **frontal lobe power**.

First, as the story goes, a Teutonic plate beneath Africa shifted over 3.5 million years ago; it formed a Savannah in East Africa. Hominids there faced a new set of problems. The plush fruit giving trees were gone. In their place were roaming animals and sparse vegetation. They had to forage for food. As a result, their problem solving capabilities expanded. They increased frontal lobe power.

This also led to better tools for hunting and preparing food. It led to organized nonverbal language and eventually language, as the need to communicate more effectively also grew.

The harsh environment became a bifurcation point (dieback or grow) that, in turn, amplified into better brains, words and tools.

As used so far and akin to Gardner’s early definition of intelligence, frontal lobe power is the ability to pose and solve complex problems and fashion multidimensional texts.

But it has a Brain 101 description worth noting. Patricia Wolfe sees the frontal lobe as follows.

Located in the front of the brain and extending back to the top of the head, the frontal lobe has expanded rapidly over the past 20,000 generations and is what most clearly distinguishes us from our forefathers. Your abilities to move parts of your body at will, think about the past, plan for the future, focus your attention, reflect, make decisions, solve problems, and engage in conversations are all possible because of this highly developed area of your brain. But perhaps more amazing than any of these functions is the fact that the frontal lobes of the cerebral cortex are what allows you to be consciously aware of all these thoughts and actions. (Wolfe, 2001)

Recast into a metaphor, frontal lobe power is the capacity to imagine possibilities unbounded by the constraints of time and space.

For example, frontal lobe power, perhaps, began to accelerate when humans invented the plow and created an Agrarian Society along the Nile River some 10,000 years ago. Now frontal lobe power helps us to imagine the day humans will plow the land on Mars.

Frontal Lobe Power

9/11 illustrated an awful misuse of frontal lobe power.

At 9:03 A.M. on September 11, 2001, a 747 jet from Boston enroute to Los Angeles veered away. It speared the World Trade Tower in New York City.

The jet’s penetration into the tower was strategic. Fully loaded with over 10,000 gallons of jet fuel, it struck high up on the tower so when the fuel ignited, the water sprinkler system was overwhelmed. (Jet fuel could not be extinguished by water anyway. Only foam from fire extinguishers could put it out. But this fire was so huge and intense there would not have been enough fire extinguishers in the whole of Manhattan.)

Jet fuel burns at about 2,000 degrees. Heat this intense was too much for the steel beams supporting the building. One steel beam ran up the center of the building. The plane breached it and compromised the structure. Heat from the fire was greater than the 1,500 degrees the other steel beams were made to withstand. They melted leaving the floors above without support. Those floors caved in. Under combined weight, they crushed all the floors below and all the people on them.

Less than an hour later a second jet speared high up on the second tower. Enough time had passed so that many news people were on the scene to digitally capture it live. *Time magazine*, for example, sent 200 reporters out to cover the story. *Newsweek* did likewise.

While at home preparing for cancer surgery and healing from a torn Achilles tendon, I had been writing a paper. My wife called from her cell phone. She told me that a plane struck the World Trade Center tower.

“Turn on the TV!” she urged. I switched on CNN in time to see the second plane hit the tower. As flames spread, I realized that thousands of people would die. I saw dozens of people jump from the top floors rather than burn alive. Then I saw the first tower crumble. It was like the implosion of Sears Tower in Philadelphia, except that it was top down and people had been fleeing the building. Many would not get out.

Around the same time the planes attacked the World Trade Center towers, a third plane struck the Pentagon. A fourth plane crashed in Western Pennsylvania. It turned out that terrorists had hijacked all four planes.

At least 19 of them controlling the four planes and an unknown number of supporters were behind those deadly missions. (Gibb, 2001)

Their misused frontal lobe power hit the most powerful country in the world at two of its symbolic centers and killed hundreds of people in the process. In their terrorist wake, world business suffered and fear spread to children. Fear created a growth industry, namely homeland security. Indeed, Homeland security (itself an example of convergence) had roots in 9/11.

The orchestrated attacks signaled a new level in terrorism: the use of ordinary tools as strategic weapons to kill civilians. These terrorists imagined possibilities unbounded in time or space.

On the other hand, a positive application of frontal lobe power took place in room 305 of the Chemistry building, one of the oldest structures on the campus of Howard University. It was the evening of January 10, 2005.

Wade Noble took center stage of the packed classroom of graduate students and faculty participating in the first session of a new seminar “African Psychology.”

Along with professors Calvin and Goodard, Dr. Nobles presented core ideas of African Psychology. In became clear to me that African Psychology with its bent of spirituality, holism, and collectivism had the potential to inform a third wave of intelligence over the next 100 years. But more on that in the scenarios.

Both the terrorist attacks on our nation and Wade Noble’s collaboration with Dr. Rashid, Dean of the College of Education, to create an Institute of African Psychology at Howard University illustrated something important about teachable intelligence: its emergent property—frontal lobe power—is becoming more visible, and this brain power imagines possibilities for common destruction or common good.

To the issue of this paper, however, is the question how might human intelligence (embodied in the emergent property frontal lobe power) evolve over the next 100 years? Best, worst, and probable scenarios offer three perspectives.

The Next 100 Years of Human Intelligence

Best Scenario

Early in the 21st century an obscure Literacy Coach in Washington, DC observed that at least five theoretical ideas about teachable intelligence seemed to be merging into a new view of intelligence.

By 2005, *Futures Research Quarterly* had published “Convergence.” Yet the notion of teachable intelligence remained dormant for another 15 years.

In 2020, a researcher in Brazil became interested in a full blown theory of intelligence that had sprung from African Psychology.

A younger researcher in Ghana had been reviewing the literature on teachable intelligence. Both researchers came across the Convergence piece, and thanks to the more developed Internet, they were able to collaborate across continents to create a third wave of intelligence, one that connected spiritness, collectivity, and wisdom.

True to Briggs’ and Peat’s chaos theory assertion that butterfly power meant ideas from one person can bifurcate, then amplify beyond that person’s reach or even lifetime, they read about the notion of teachable intelligence and frontal lobe power.

As it was when James Burke described connections, these researchers began to imagine possibilities unbounded by time and space. They saw all of the theories including the new one from African Psychology as an interconnected whole, a network of ideas about intelligence with at least one emergent property that could be measured and several such as Gardner’s existential intelligence (the capacity to ponder or pose questions about life, death, God, Dharma, and other ultimate realities) that still defied measurement.

After all, Stephen Jay Gould had correctly pointed out that science and religion were non overlapping magisteria. Thus, no scientific evidence would be forthcoming for the ninth intelligence until a new technology had been invented.

Thanks to the convergence of digital electronics and brain imaging, the “Brain Caps” once described in one of science fiction writer Arthur Clark’s Space Odyssey novels became a reality. By 2050, the year NASA created a permanent city on Mars. This technological breakthrough enabled the researchers to chart the neurophysiological pathways of people when engaging their frontal lobes.

Their own life spans greatly extended, the two researches were still around to form an international team of researchers including apprentice researchers from high schools around the globe. Together, they synthesized their work into a grand unified theory of intelligence, one that incorporated native endowment theories into teachable intelligence views, and teachable intelligence views into spiritness, collectivity, and, wisdom.

Grid computing made this possible.

While writing for the New York Times, science reporter Steve Lorr said, “for three days, a prototype project called I-Way, linked more than a dozen big computer centers in the United States to work as a single machine on computationally daunting simulations, like the collision of neutron stars and the movement of cloud patterns around the globe.”

That was in 2004.

A decade later, when grid computing became available to the public, it enhanced computing centers in universities, government agencies, and corporations. It soon spread to the public, and then around the world.

In 2061, the year Haley’s Comet returned, the once young researchers used an enhanced version of grid computing to augment their unified theory of intelligence.

Thanks to a deep network of digital communication, ordinary teachers and citizens quickly became familiar with basic ideas from the theory. Whole school systems understood that intelligence could be increased with teaching, coaching, parenting, and experiences.

The nation understood that increased frontal lobe power resulting from this deepest of educational reforms would translate into better workplaces and an overall stronger, global economy. Such widespread attention to growing intelligence seemed sure to make Chad Holliday’s early 21st century dream of sustainable growth for DuPont one achievable for many companies and nations.

By 2075, schooling had come to mean teaching the truth in schools, television, playing fields, dance studios, theaters, museums, homes, and hospitals. This too had been amplified by the national effort to increase intelligences in all human beings—an effort that began, almost accidentally, early in the 21st century with President Bush’s “leave no child behind” legislative act, but that never really took hold until President Barack Obama created the National Intelligence Act of 2014.

By 2101, signs of Homo intelligens appeared. Multiple avatar-like humans surfaced in our nation and in other parts of the world. These people were the first of the new humans capable of using their full frontal lobe power and living in harmony with all life and non life on planet Earth and beyond. They co-existed with Homo sapiens, most of whom had become highly spiritual beings. Most people on planet Earth behaved in a way that showed their belief in God’s new Gospel: We are all one.

Worst Scenario

Hope rose high in the hearts of several early 21st century thinkers.

The Gorbachav commission had brought together over a thousand world class scientists to ferret out their thoughts about a new paradigm just before the new millennium. Frijof Capra had spent five slow cooked books to describe the criteria and theory of a new paradigm and a new theory of complexity.

In contrast to Capra, Briggs and Peat saw the new paradigm as chaos theory emerging into a cultural metaphor equal to Darwin's theory of evolution in the 19th century.

Chad Holliday, the CEO of DuPont had demonstrated how sustainable growth could make billions of dollars by taking care of people and the environment.

Yet, the Bush administration and policy makers across the nation continued to practice fragmented, mechanistic views of education.

The mechanistic paradigm that had dominated human thought for 800 years was hard to see around. It had a big trunk that blocked strategic thinking. Yes, a few school districts with visionary leaders managed to create systems that fostered the development of teaching intelligence in the schools. Many districts supported National Board Certified Teacher Candidates as another serious reform effort.

But most districts still thought that vouchers, charter schools, state takeovers and privatization would somehow lead to increased student achievement. Student achievement itself remained operationally, though inadequately, defined as scores on new and improved standard measurements.

As a rule, normative assessments--rich with teacher insights about the degree to which students understood a discipline--rode in the back of the bus while the psychometric nature of many summative assessments took all the front seats.

More holistic views of assessment such as electronic and hardcopy portfolios of student works showing progress over time and even harder to quantify performances of understanding through projects and enactments continued to be limited to a few enlightened districts.

Educational systems embedded in media and multiple settings remained disconnected.

Mechanistic thinking from the Bush administration stifled the development of new thinking under the banner and policy hammer that only "scientifically based research" could inform classroom practices. Alone, this was not an entirely bad idea because empirical research had led to gains in theory and practice. But the policies and beliefs led to a new tailorism that cut funds to innovative ideas that never got the chance to get support from scientific research. Nor were the insights from qualitative research, handling problems too complex for carefully controlled studies, given value.

Even programs with a record of success were cut or dismantled.

In 2006 the Bush administration cut the 20 million dollar funding for the National Writing Project despite sound evaluation from outside evaluators.

Under his charge resegregation of schools became more virulent, bi lingual education became stifled and multicultural education lost favor.

Culturally responsive education became impossible in a climate of adequate yearly progress on standardized tests.

Like a Tsunami, a xenophobic posture spread over the nation carrying waves of ignorance at 500 miles per hour.

Whole districts forced the most accomplished teachers to follow scripts in reading, math, history, and science programs to the letter. Such practice killed the creativity of most accomplished teachers who were capable of using programs in innovative ways that improved them considerably. Teachers practicing "hybridity" (combining prescribed instructional programs with teacher wisdom and creativity) were hunted down and fired.

And the racism that had characterized mechanistic education in the 20th century maintained its force in the 21st century.

The 20th century had opened with only elite white males getting an education for power and consequence. This group had been trained for ownership, leadership, and creativity while the masses were trained for factories, farms, and frontlines. By the end of the 20th century the elite class had expanded to include talented women and pre approved racial minorities. But the masses still received an education that kept them powerless--kept them on the one way track of antisocial behavior ending in drug addiction, homicide or prison.

Because the economic needs of our nation called for people in the workplaces who learned how to think, learn, and create--what John Naisbitt had once called the 21st century basic skills--and not enough citizens were educated that well, the nation accelerated its practice of draining the best brains from countries around the world. This practice assured that nations such as Egypt would continue a downward spiral and nations such as ours would continue developing its own underclass of misfits in a modern world.

In the long shadow of leadership from early 21st century CEO, DuPont's Chad Holliday, the 150 or so companies that formed the consortium for sustainable growth became beacons of light for backward nations such as the United States. They were still proving that educating people in the lands in which they did business and taking care of the environment in those same lands provided good workers and expanded markets. The United States' began to learn from them.

And it was as African American historian Edward Robinson said, "you can hold back the wave, but no man can hold back the tide."

No one was able to hold back the tide of truths about intelligence emerging from African Psychology.

By 2101, our nation was able to break from its "limit cycle of dysfunction."

Probable Scenario

Butterfly power became the hero of the day. Howard Gardner's 1983 theory began life as a solo voice against the traditional view of intelligence. His theory of multiple intelligences drew sharp rejection and criticism from the psychological community and wide acceptance from the educational community. First offered as basic research, fellow psychologists rejected the theory because it did not fit common notions of social science. It did not derive from scientifically based research.

But as Jerome Bruner pointed out late in the 20th century, psychology had been set in yesterday's physics. It needed to move on to rekindle a love of big questions that defied quantification but that got at the very heart of humankind.

Gardner's theory did that. It gave a new way of looking at human potential. It was a bifurcation point that said people were more than their IQ scores. They were capable of developing depth in any one or any combination of eight plus one intelligences.

What's more, teachers, parents, coaches, and experiences would have a lot to do with whether a given individual would see a potential intelligence realized.

Not waiting for the hand of approval from psychologists, ordinary teachers created classrooms and schools set up to develop the intelligence profiles for each child.

Whole curriculums such as the Massachusetts framework and College Board's *Springboard* program incorporated MI theory into its fabric.

By 2025, the research base for multiple intelligence theory, however, thanks to developments in brain imaging, made use primarily of quantitative studies. These began to confirm the theory more than disconfirm it.

And MI theory had additional support from the growth of at least four other theories in the same family.

Robert Sternberg's triarchic theory had a research base, practical applications and a new intelligence test to match.

Ellen Langer's mindfulness theory became a curriculum framework for many school systems.

David Perkins' learnable intelligence theory attracted researchers because it was given to both quantitative and qualitative studies.

Brain research applications began to show signs of becoming a theory of intelligence unto itself. It certainly had already been used to support research on the other theories as brain imaging technologies grew more sophisticated and available.

The holistic view of intelligence, as a manifestation of spiritness from African Psychology, provided a second order change (a change of the whole versus first order change in which the parts change while the whole remains the same).

President Barak Obama created a landmark legislative act that served as a more enlightened extension of Bush's No child Left Behind act. President Obama's National Intelligences Act fostered the full blown use of the family of second wave views of intelligence, the teachable intelligence construct, and the third wave insights from African Psychology.

Teachable intelligence became the heart of a nation of thinking classrooms by 2054, the 100th anniversary of the Brown v Board of Education landmark 1954 decision that lead to integrating schools across the nation.

By 2061, the notion of intelligence as multiple and teachable had gained worldwide acceptance. Gardner's original MI theory had been amplified. But standing above it was the notion that intelligence was spiritness, collectivity, and wisdom—pillars of the African psychology perspective.

SBA: DEEP THOUGHT— THIRD WAVE OF INTELLIGENCE

CONCEPT	FEATURE	DESCRIPTION
SPIRITNESS	EMBODY THE LIGHT	WE ARE ALL ONE.
COLLECTIVE	ACT WITHIN CONTEXT AND CULTURE	WE CREATE THE GLOBAL BRAIN.
WISDOM	SUSTAIN EARTH	WE ARE ALL STEWARTS OF PLANET EARTH.

It was then that our nation and schooling began to focus on intelligence as the cornerstone of deep educational reform. Whole curriculums were designed to develop the multiple intelligences profile of every child regardless of race, gender, class, or ethnic group. Gardner's MI approach became one of several instructional design theories that fostered deep disciplinary understanding in all children.

For the first time in history the average classroom became a thinking classroom, and the 1868 words Horace Mann penned in his twelfth annual report to the Massachusetts State Board of Education became real.

“Education then, beyond all other devices of human origin, is a great equalizer of the conditions of men.”

Whole systems sought to give each child an education for power and consequence by enhancing his or her spiritness, and heightening collective problem solving and posing, and extending wisdom to what we do for mother Earth to increase sustainability.

By 2075, the United States had become an intellectual farmland, inviting top minds from other countries to join our pursuit of intelligence, but sending top minds from here to develop minds in other countries.

By 2101, our nation had begun to understand that sustainable growth and development depended on taking care of people and the environment.

The seeds for Homo intelligens had been sown.

Final thought

Unlike forecasts, scenarios make no effort to be right (or wrong). Instead they help us to see possibilities unbounded by time and space. They also help us to ask probing questions based on Briggs' and Peat's discussion of chaos theory. (Briggs and Peat, 1999)

- ❖ What is missing from the scenarios?
- ❖ What new questions shall we ask?

I invite you to use your frontal lobe power. Imagine possibilities unbounded by time and space. It is, after all, as the late Frank Herbert wrote in *Chapterhouse Dune*, the final book of his science fiction masterpiece—the *Dune* saga.

“Education is no substitute for intelligence. That elusive quality is defined only in part by puzzle solving ability. It is in the creation of new puzzles reflecting what your senses report that you round out the definition.”

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